In re Application of WILLIAMS et al.
Serial No. 09/849,170

REMARKS

The Office action has been carefully considered. The Office action rejected claims 1, 2, 3, 8, and 17 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. US 6,633,282 to Monroe et al. ("Monroe"). Further, the Office action rejected claims 1-3, 5, 8-14, and 17-22 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. US 5,239,292 to Willan ("Willan"). Further yet, the Office action rejected claims 4, 6, 7, 15, and 16 under 35 U.S.C. § 103(a) as being unpatentable over Willan in view of U.S. Patent No. US 6,188,392 to O'Connor et al. ("O'Connor") as well as being unpatentable over Monroe in view of O'Connor. Applicants respectfully disagree.

By present amendment, claim 1 has been amended for clarification and not in view of the prior art. Applicants submit that the claims as filed were patentable over the prior art of record, and that the amendments herein are for purposes of clarifying the claims and/or for expediting allowance of the claims and not for reasons related to patentability. Reconsideration is respectfully requested.

Prior to discussing reasons why applicants believe that the claims in this application are clearly allowable in view of the teachings of the cited and applied references, a brief description of the present invention is presented.

Applicants' technique is generally directed towards providing thickness information for digital ink. To this end, applicants may use a thickness conversion component that converts movement of a pen across a surface or tilting of a pen into thickness information for digital ink data. The pen in applicants' technique may

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include at least one ballistic information generator (typically an accelerometer) that
is used to generate either ballistic movement or ballistic pen tilting information
based on self-movement. For example, the accelerometer generates the
movement or tilt information in the form of pulses, the width of each pulse being
directly related to the acceleration of the pen movements or the tilt of the pen,
respectively. The thickness conversion component converts the acceleration
information, with or without additional information such as coordinate information,
available pressure information, pen angle information, and vector information, into
thickness information for digital ink. Thus, no other outside information is needed
to generate thickness information but for the information generated from the
ballistic generator. This thickness information may be used to generate variably
thick lines, which may be useful for a variety of applications, for example, better
display and improved recognition.

Note that the above description is for example and informational purposes
only, and should not be used to interpret the claims, which are discussed below.

Rejections based on §102(e)

Turning to the claims, independent claim 1 recites a computer system,
comprising a writing instrument that generates, using a ballistic information
generator that generates ballistic information about self-movement, movement
information including acceleration information from a user's handwriting and a
conversion component that utilizes the acceleration information to generate line
thickness information.

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The Office action rejected claim 1 as being anticipated by Monroe. More specifically, the Office action contends that Monroe teaches a computer system comprising a writing instrument that generates, using a ballistic information generator, movement information including acceleration information from a user's handwriting. Figs. 1-3, items 10, 24, and 28 of Monroe are referenced. Further, the Office action contends that Monroe teaches a conversion component that utilizes the acceleration information to generate line thickness information. The abstract and column 3, line 38 to column 4, line 22 of Monroe is referenced. Applicants respectfully disagree.

As has been presented in a previous Office action response, Monroe is directed, generally, toward a system and method for using a pen that includes directional sensors for determining the direction and length of pen strokes. More specifically, sensors 24 and 28 are video sensors that "watch" the ball point and transmit pen movements relative to the paper. That is, the sensors are not ballistic sensors that detect self-movement, e.g., of the sensors themselves or the movement of the pen. The movement information of Monroe is determined relative to the paper, not by self-movement. The sensor system breaks the stroke signal into typical "x" and "y" coordinates. The pen is further able to determine a "z" axis coordinate by monitoring a pressure sensor so that the thickness and boldness of the stroke may be recorded. That is, the thickness of the line is determined by a pressure sensor when pressed against a writing surface and is a function of how much pressure is applied down on the pen itself.

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In contrast, claim 1 recites a writing instrument that generates, using a ballistic information generator, movement information including acceleration information from a user's handwriting and a conversion component that utilizes the acceleration information to generate line thickness information. Video sensors 24 and 28 are not ballistic information generators that generates information based on self-movement. A video sensor can only generate information about sensed images. Simply put, Monroe cannot possibly be construed to teach a ballistic information generator as recited in claim 1.

Furthermore, as has been previously argued, the thickness information is generated from the acceleration information in the recitations of claim 1 and not from a pressure sensor as Monroe teaches. The system and technique disclosed by Monroe is significantly different from applicants' and uses a pressure sensor to generate thickness information, rather than acceleration information as claimed by applicants. Generating thickness information from a pressure sensor is vastly different from generating thickness information from a ballistic information generator. A pressure sensor is not a ballistic information generator.

Nevertheless, claim 1 has been amended to recite that the ballistic information generator generates ballistic information about self-movement. Surely, Monroe cannot be construed to teach that the video sensor or the pressure sensor as taught is able to generate information about self-movement. A pressure sensor requires a surface for pressing against and a video sensor requires changing images in the form of paper. Clearly, claim 1 is allowable over the Monroe and other prior art of record for at least these reasons.

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Applicants respectfully submit that dependent claims 2, 3, and 8 by similar analysis, are allowable. Each of these claims depends either directly or indirectly from claim 1 and consequently includes the recitations of independent claim 1. As discussed above, Monroe fails to disclose the recitations of claim 1 and therefore these claims are also allowable over the prior art of record. In addition to the recitations of claim 1 noted above, each of these dependent claims includes additional patentable elements.

Turning to the next claim rejected under §102(e), dependent claim 17 was amended in the previous Office action response to depend from claim 9. Applicants do not understand how a dependent claim can be rejected under §102(e) as being anticipated by a first reference (Monroe) when its parent claim is not, but was ratherrejected under §103(a) and being unpatentable over an entirely different reference (Willan). Thus, applicants respectfully traverse the rejection.

<u>Rejections based on §103(a)</u>

As discussed above, amended claim 1 recites a computer system, comprising a writing instrument that generates, using a ballistic information generator that generates ballistic information about self-movement, movement information including acceleration information from a user's handwriting and a conversion component that utilizes the acceleration information to generate line thickness information.

The Office action rejected claim 1 as being unpatentable over Willan. More specifically, the Office action contends that Willan teaches a writing instrument that generates, using a ballistic information generator, movement information, the

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movement information including acceleration information from a user's handwriting. Column 1, lines 54-67, column 3, lines 13 to column 4, line 16, column 4, line 45 to column 5, line 36, and column 8, lines 3-6 of Willan are referenced. Further, the Office action contends that although Willan does not teach a conversion component that utilizes the acceleration information to generate line thickness information, that this recitation would have been obvious to a person skilled in the art at the time the invention was made because Willan teaches that a line thickness increases with velocity or shape changes in a brush. Applicants respectfully disagree.

By law, in order to establish *prima facie* obviousness of a claimed invention, all of the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). In addition, "all words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). Further, if prior art, in any material respect teaches away from the claimed invention, the art cannot be used to support an obviousness rejection. *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed Cir. 1997).

As has been presented in a previous Office action response, Willan is directed, generally, to a graphics system having an input device, an associated computer for detecting changes in the position of the input device relative to a writing surface, and a monitor for displaying patterns which follow the movement of the input device. In particular, Willan teaches a system that attempts to simulate a brush with a pressure-sensitive input device. Similar to Monroe, the system of

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Willan also teaches a pressure sensor system in the input device that breaks the stroke signal into typical "x" and "y" coordinates. The input device is further able to determine a "z" axis coordinate as well by monitoring a pressure sensor. Thus, these three parameters are used to interpret the movement of the tip of input device when engaged with a writing surface to yield a myriad of stroke information to display on the monitor, i.e., "painting." Willan teaches that the thickness of lines displayed may vary based upon an analysis of the sensed pressure in the "z" direction at the tip of the input device on the writing surface.

In stark contrast, claim 1 recites a writing instrument that generates, using a ballistic information generator, movement information including acceleration information from a user's handwriting and a conversion component that utilizes the acceleration information to generate line thickness information. That is, the thickness information is generated from the acceleration information and not a pressure sensor as Willan teaches. The system of Willan necessarily requires a pressure sensor in order to measure pressure at the point of an input device and does not teach or even suggest generating movement information including acceleration information to determine line thickness. Quite differently, claim 1 recites a writing instrument that generates, using a ballistic information generator, movement information including acceleration information and a conversion component that utilizes the acceleration information to generate line thickness information.

Furthermore, The Office action has incorrectly referenced Willan in which it is contended that Willan teaches a ballistic generator. In specific, the Office action

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contends that Willan teaches a ballistic generator at column 1, lines 54-67. This

section of Willan recites:

> "The determined derivative may be velocity (first derivative),
> acceleration (second derivative) or higher order derivatives. The
> determined derivatives are then used to control for example the
> shape, width, density, texture and colour of the resultant visual effect.
>
> Preferably, the velocity and acceleration of the input device are
> detected and used to control the displayed pattern. Inertial effects can
> also be simulated by considering the simulated mass of a component
> of an input device and its acceleration. Erratic or "jerky" movements
> can also be detected by monitoring the rate of change of the
> acceleration to enable the simulation of the results of such
> movements. Thus many of the characteristics which give traditional
> media a unique "feel" can be simulated."

Thus, Willan teaches a manner in which "[i]nertial effects may be simulated"

by using velocity and acceleration data. In this passage, Willan is silent as to how

the velocity and acceleration data is obtained. It can only be assumed that this

information is obtained by the "means for detecting changes in the position of the

input device relative to a surface." As the only means disclosed in Willan comprise

pressure sensors, surely, the means for detecting cannot be construed to be a

ballistic information generator. Such a contention is a huge leap in logic as

nowhere else in Willan is the word ballistic used in and of itself or in any derivative

form. A pressure sensor cannot possibly be construed to be a ballistic information

generator. Willan simply does not teach a ballistic information generator as recited

in claim 1.

Nevertheless, claim 1 has been amended to recite that the ballistic

information generator generates ballistic information about self-movement. Willan

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cannot be reasonably construed to teach that the pressure sensor as taught is able to generate information about self-movement. A pressure sensor necessarily requires a surface for pressing against, typically in the form of paper or a canvas. Willan does not teach or even suggest a ballistic information generator that generates ballistic information about self-movement as recited in claim 1. For at least these reasons, applicants submit that claim 1 is allowable over the Willan whether considered alone or in any permissible combination with any other prior art of record.

Applicants respectfully submit that dependent claims 2- 8 by similar analysis, are allowable. Each of these claims depends either directly or indirectly from claim 1 and consequently includes the recitations of independent claim 1. Neither Willan nor Monroe teaches or even suggests the recitations of claim 1 and therefore these claims are also allowable over Willan and Monroe, whether considered alone or in any permissible combination of any prior art of record. In addition to the recitations of claim 1 noted above, each of these dependent claims includes additional patentable elements.

For example, claim 8 recites an accelerometer configured to generate tilt information. In one embodiment of the present invention, a thickness conversion component may convert information of tilting of a pen into thickness information for digital ink data. The pen may include at least one accelerometer that is used to generate pen tilting information that is received by the thickness conversion component. Nowhere in Willan or any other prior art of record is this recitation disclosed. Instead, Willan describes a method for simulating gravity as if the

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writing surface (*i.e.*, representing a canvas) was tilted to an angle. (See, abstract, column 2, line 41-50 of Willan) That is, the writing surface is simulated to be tilted, but the system is unable to determine if the input device itself is tilted. Applicants submit that claim 8 is allowable over the prior art of record for at least this additional reason.

Turning to the next independent claim, claim 9 recites a computer system, comprising a writing instrument that generates, using a ballistic information generator, movement information including acceleration information from a user's handwriting and a conversion component that utilizes the acceleration information to generate line thickness information based upon spacing of plots in a map of a plot of the movement information.

The Office action rejected claim 9 as being unpatentable over Willan. More specifically, the Office action contends that Willan teaches a writing instrument that generates movement information, the movement information including acceleration information from a user's handwriting. Column 3, lines 13 to column 4, line 16, column 4, line 45 to column 5, line 36, and FIG. 4 of Willan are referenced. Further, the Office action admits that Willan does not teach a conversion component that utilizes the acceleration information to generate line thickness information based upon spacing of plots in a map of a plot of the movement information, but contends that this recitation would have been obvious to a person skilled in the art at the time the invention was made because Willan teaches that a line thickness increases with velocity or shape changes in a brush. Applicants respectfully disagree.

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As discussed above, Willan teaches a pressure sensor system in the input device that breaks the stroke signal into typical "x", "y", and "z" coordinates. Thus, these three parameters are used to interpret the movement of the tip of input device when engaged with a writing surface to yield myriad information to display on the monitor, *i.e.*, "painting." As discussed above, Willan teaches away from applicants' invention by using a pressure sensor in order to determine line thickness information rather than using acceleration information as claimed by applicants. In specific, Willan teaches that the thickness of lines displayed may vary based upon an analysis of the sensed pressure in the "z" direction at the tip of the input device on the writing surface. Willan fails to teach or even suggest the recitations of claim 9 and therefore applicants submit that claim 9 is also allowable over Willan, whether considered alone or in any permissible combination of any prior art of record.

Applicants respectfully submit that dependent claims 10-14 and 17, by similar analysis, are allowable. Each of these claims depends either directly or indirectly from claim 9 and consequently includes the recitations of independent claim 9. As discussed above, Willan fails to teach or even suggest the recitations of claim 9 and therefore these claims are also allowable over Willan whether considered alone or in any permissible combination of any prior art of record. In addition to the recitations of claim 9 noted above, each of these dependent claims includes additional patentable elements.

Dependent claims 15 and 16, which are ultimately dependent from claim 9, were rejected in the Office action as being unpatentable over Willan in view of

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O'Connor and also rejected as being unpatentable over Monroe in view of

O'Connor. Applicants respectfully submit that dependent claims 15 and 16, by

similar analysis, are allowable. Each of these claims depends either directly or

indirectly from claim 9 and consequently includes the recitations of independent

claim 9. As discussed above, Willan and Monroe each fails to teach or even

suggest the recitations of claim 9 and therefore these claims are also allowable

over both Willan and Monroe whether considered alone or in any permissible

combination of any prior art of record. In addition to the recitations of claim 9 noted

above, each of these dependent claims includes additional patentable elements.

Turning to the last independent claim, claim 18 recites a computer system,

comprising a writing instrument that generates movement information including

acceleration and tilt information from a user's handwriting and a conversion

component that utilizes the acceleration information to generate line thickness

information based upon spacing of plots in a map of a plot of the tilt information.

The Office action rejected claim 18 for the exact reasons that claim 9 was

rejected. In fact, the Office action omitted terms of claim 18, and left them

unaddressed. Specifically, the Office did not address "tilt information" as recited in

claim 18. Thus, applicants respectfully disagree.

As discussed above, Willan teaches a pressure sensor system in the input

device that breaks the stroke signal into typical "x", "y", and "z" coordinates. Thus,

these three parameters are used to interpret the movement of the tip of input

device when engaged with a writing surface to yield myriad information to display

on the monitor, i.e., "painting." Willan teaches away from applicants' invention by

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using a pressure sensor in order to determine line thickness information rather than using acceleration information as claimed by applicants. In specific, Willan teaches that the thickness of lines displayed may vary based upon an analysis of the sensed pressure in the "z" direction at the tip of the input device on the writing surface. Nowhere in any prior art of record is such a concept of tilt information about the writing instrument taught or even suggested, let alone tilt information gleaned from acceleration. Willan fails to teach or even suggest the recitations of claim 18 and therefore applicants submit that claim 18 is also allowable over Willan, whether considered alone or in any permissible combination of any prior art of record.

Applicants respectfully submit that dependent claims 19-22, by similar analysis, are allowable. Each of these claims depends either directly or indirectly from claim 18 and consequently includes the recitations of independent claim 18. As discussed above, Willan fails to teach or even suggest the recitations of claim 18 and therefore these claims are also allowable over Willan, whether considered alone or in any permissible combination of any prior art of record. In addition to the recitations of claim 18 noted above, each of these dependent claims includes additional patentable elements.

For at least these additional reasons, applicants submit that all the claims are patentable over the prior art of record, whether considered alone or in any permissible combination. Reconsideration and withdrawal of the rejections in the Office Action is respectfully requested and early allowance of this application is earnestly solicited.
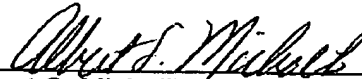
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CONCLUSION

In view of the foregoing remarks, it is respectfully submitted that claims 1-22

are patentable over the prior art of record, and that the application is in good and

proper form for allowance. A favorable action on the part of the Examiner is

earnestly solicited.

If in the opinion of the Examiner a telephone conference would expedite the

prosecution of the subject application, the Examiner is invited to call the

undersigned attorney at (425) 836-3030.

Respectfully submitted,

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CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that this Amendment, along with transmittal, petition for

extension of time, credit card payment form and facsimile cover sheet, are being

transmitted by facsimile to the United States Patent and Trademark Office in

accordance with 37 C.F.R. 1.6(d) on the date shown below:

Date: October 11, 2005   _____
                                                    Albert S. Michalik

2730 Second Amendment

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